

Fig. 1A

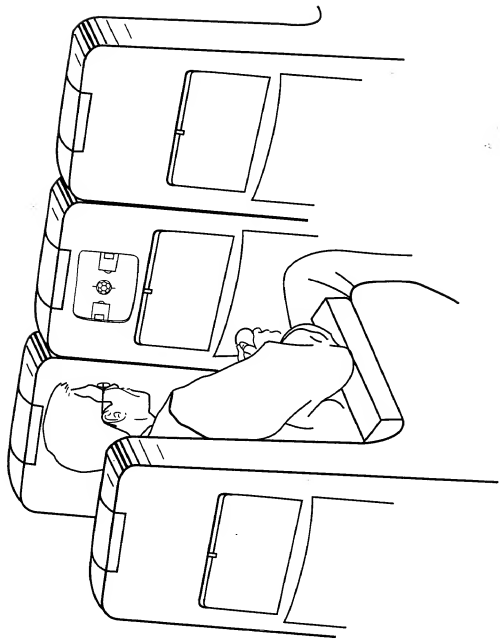


Fig. 1B

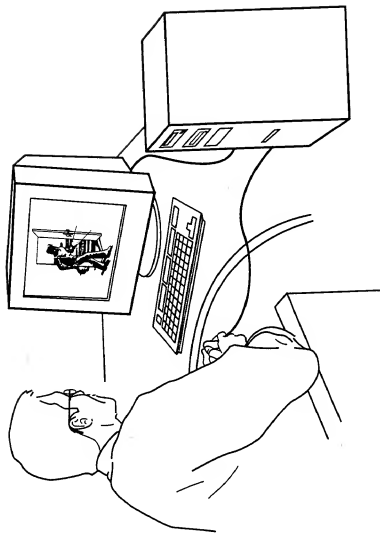


Fig. 1C

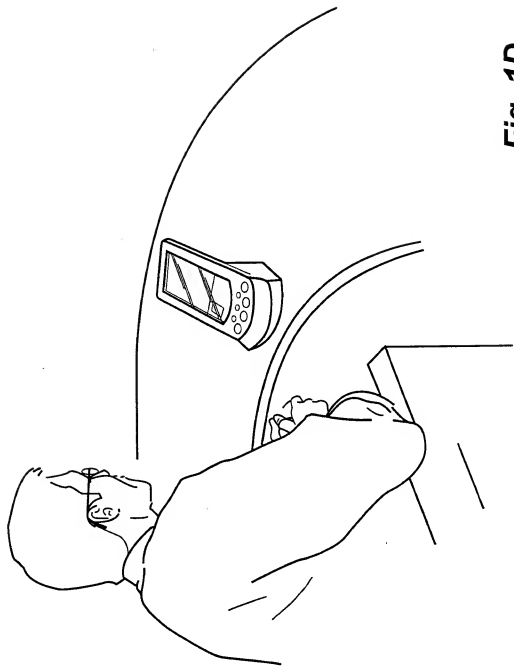


Fig. 1D

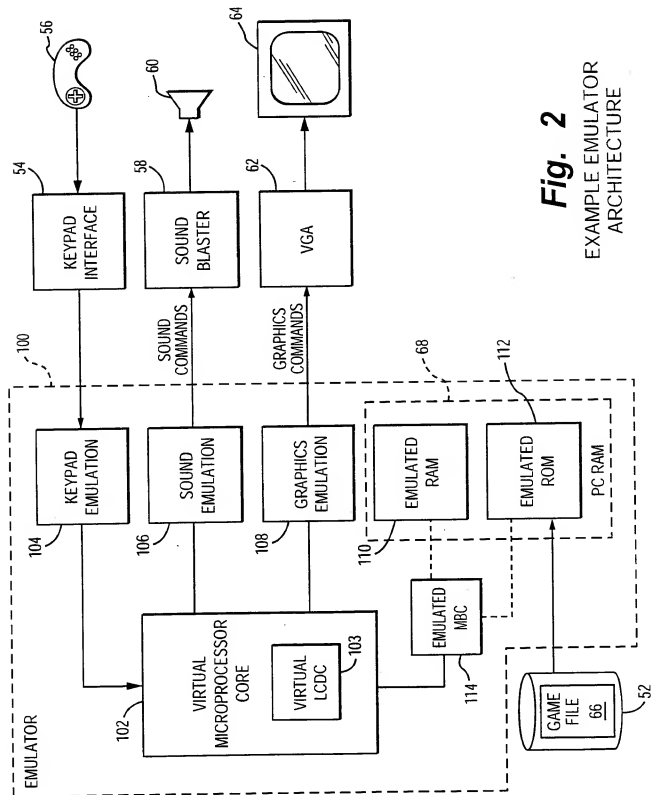


Fig. 2
EXAMPLE EMULATOR
ARCHITECTURE

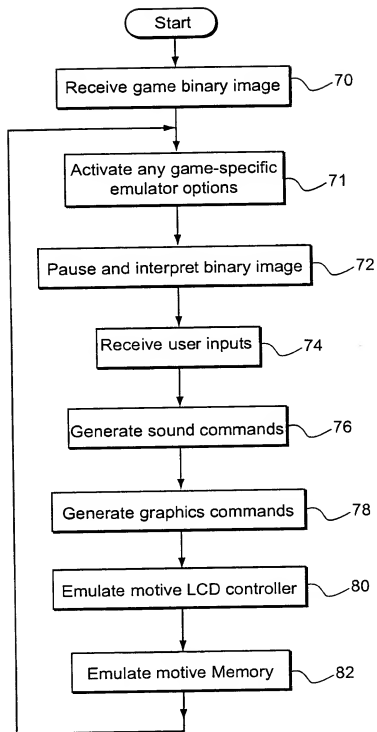


Fig. 2A

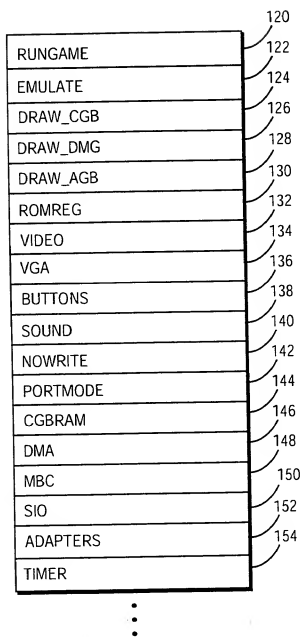


Fig. 3 EXAMPLE FUNCTIONAL MODULES

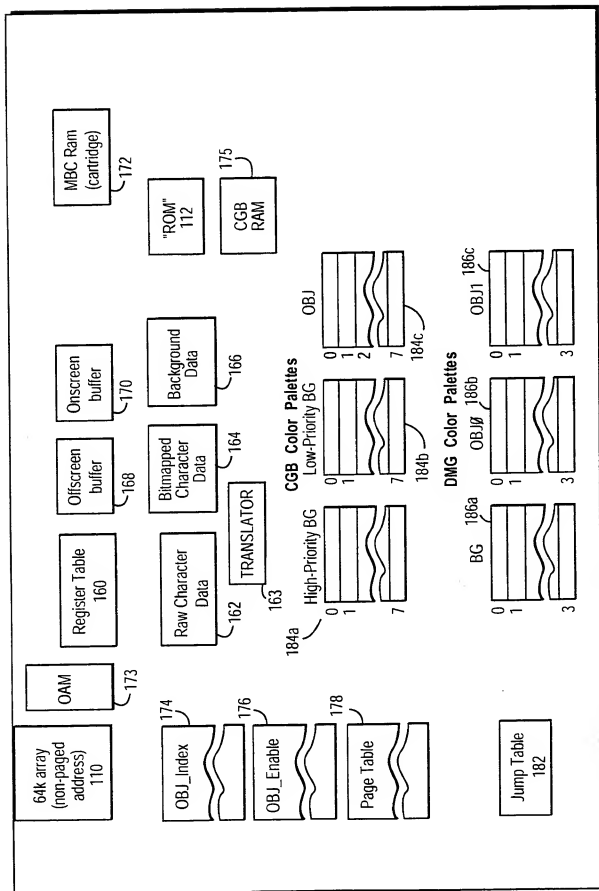


Fig. 4
EXAMPLE MEMORY OBJECTS

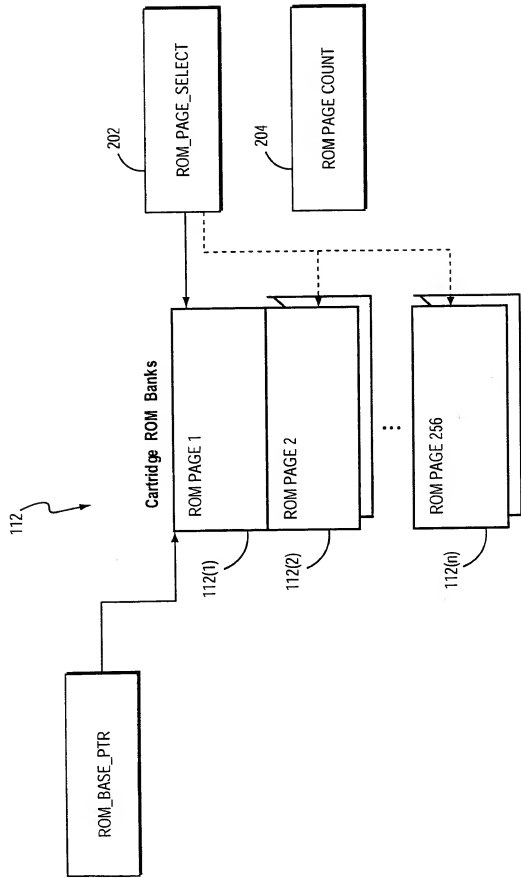


Fig. 5
EXAMPLE EMULATED CARTRIDGE ROM

Fig. 6

Compatibility modes:

| |
|------------------|
| CGB_INCOMPATIBLE |
| CGB_COMPATIBLE |
| CGB_EXCLUSIVE |
| AGB |

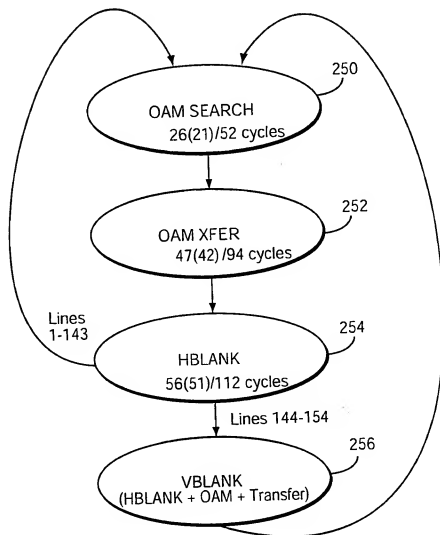
Registration Data Locations:

| |
|------------------|
| ROMREG_CGB |
| ROMREG_CARTRIDGE |
| ROMREG_ROM |
| ROMREG_RAM |

Fig. 7

Fig. 8

EXAMPLE VIRTUAL LCD CONTROLLER STATE MACHINE



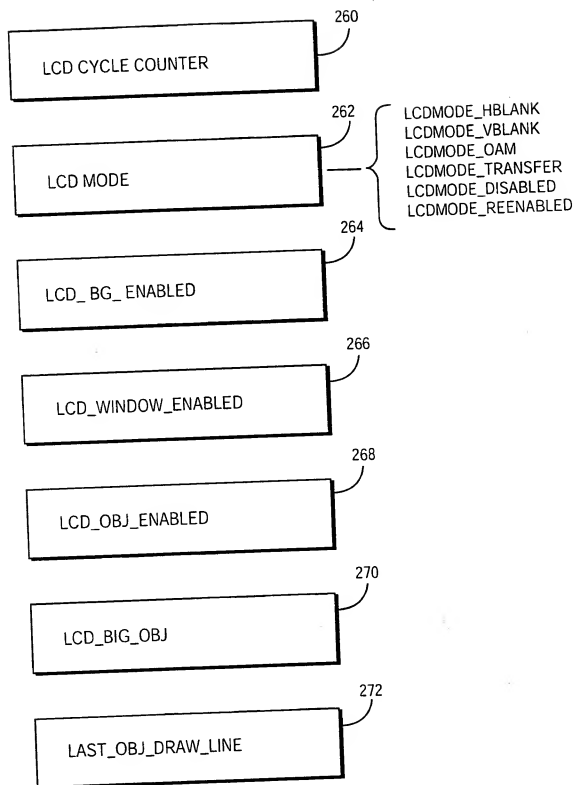


Fig. 9A
EXAMPLE LCD CONTROLLER EMULATION

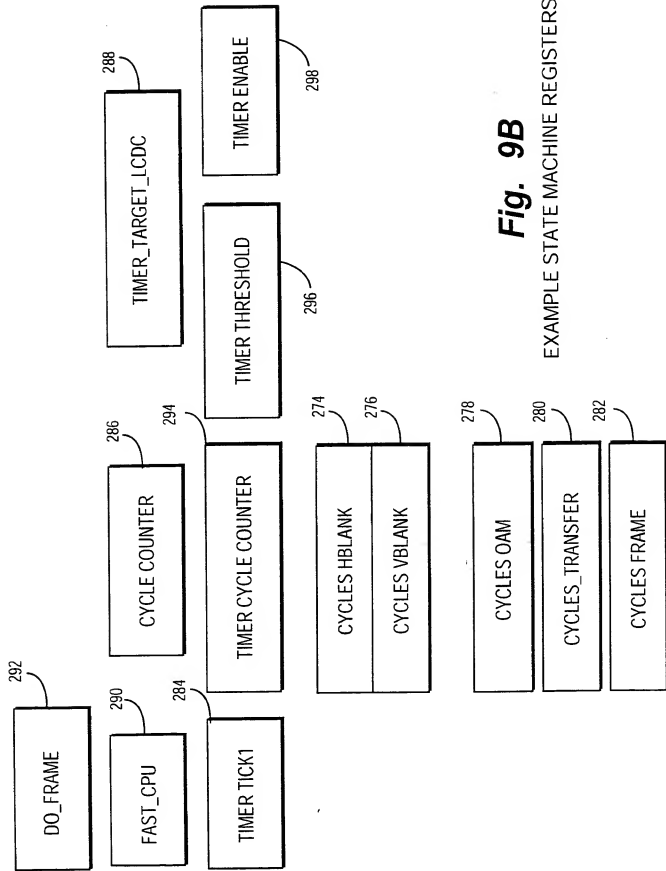


Fig. 9B

EXAMPLE STATE MACHINE REGISTERS

| Cycles per Event | DMG | CGB |
|------------------|---------------------------|--------------------------------|
| HBLANK | 56 (51) | 112 |
| OAM SEARCH | 26 (21) | 52 |
| OAM TRANSFER | 47 (42) | 94 |
| VBLANK | (HBLANK + OAM + TRANSFER) | (HBLANK + OAM + TRANSFER - 30) |
| FRAME | (VBLANK * 154) | (VBLANK * 154) |

Fig. 9C
EXAMPLE STATE MACHINE CYCLE PARAMETERS

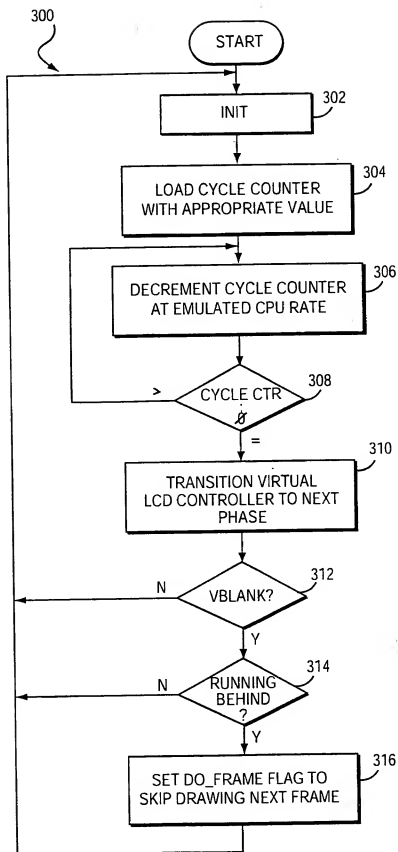


Fig. 10

EXAMPLE LIQUID CRYSTAL DISPLAY CONTROLLER

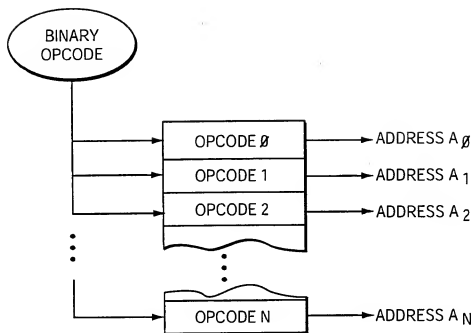


Fig. 11
EXAMPLE OPCODE JUMP TABLE

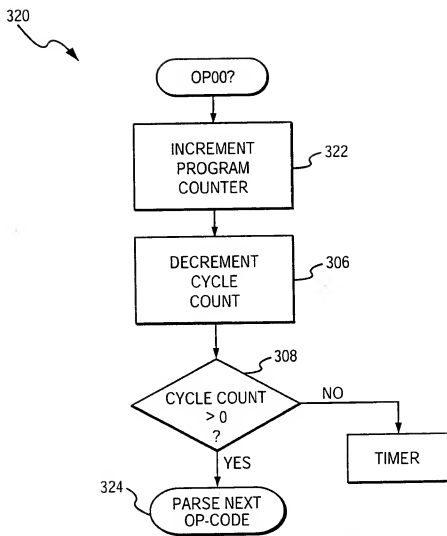


Fig. 12
EXAMPLE NOP EMULATION

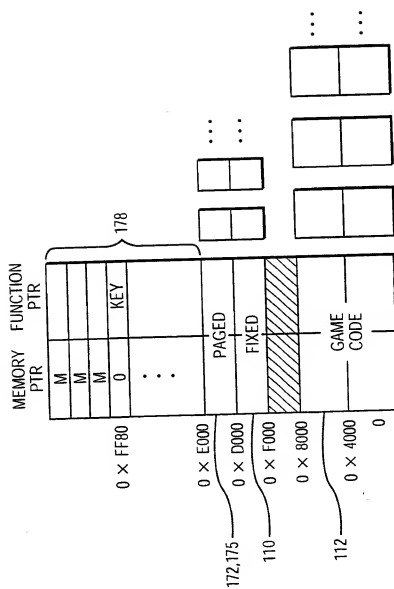


Fig. 13

EXAMPLE PAGE TABLE

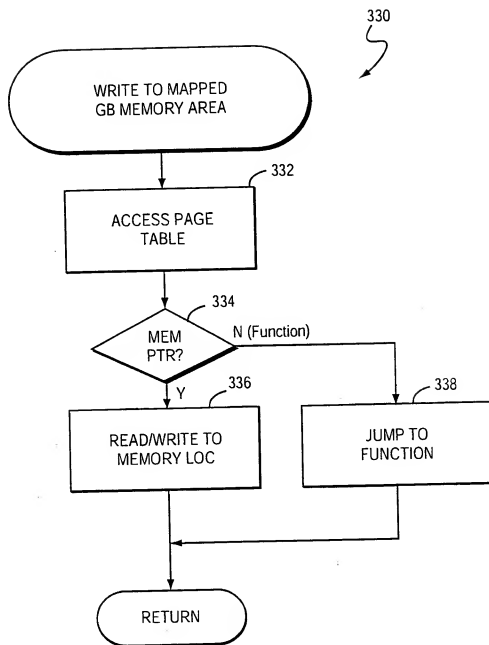


Fig. 14
EXAMPLE MEMORY ACCESS OPERATION

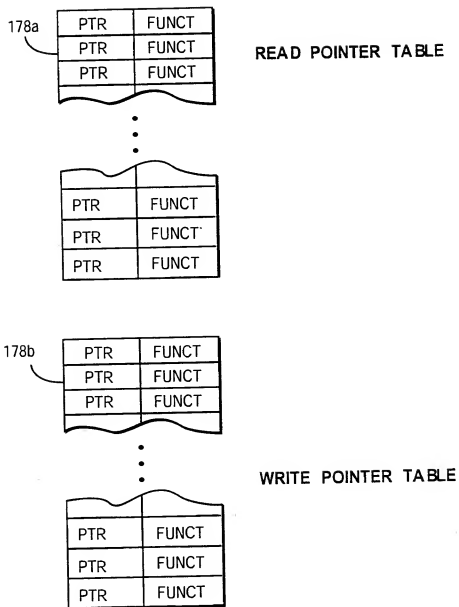


Fig. 15
EXAMPLE READ + WRITE TABLES

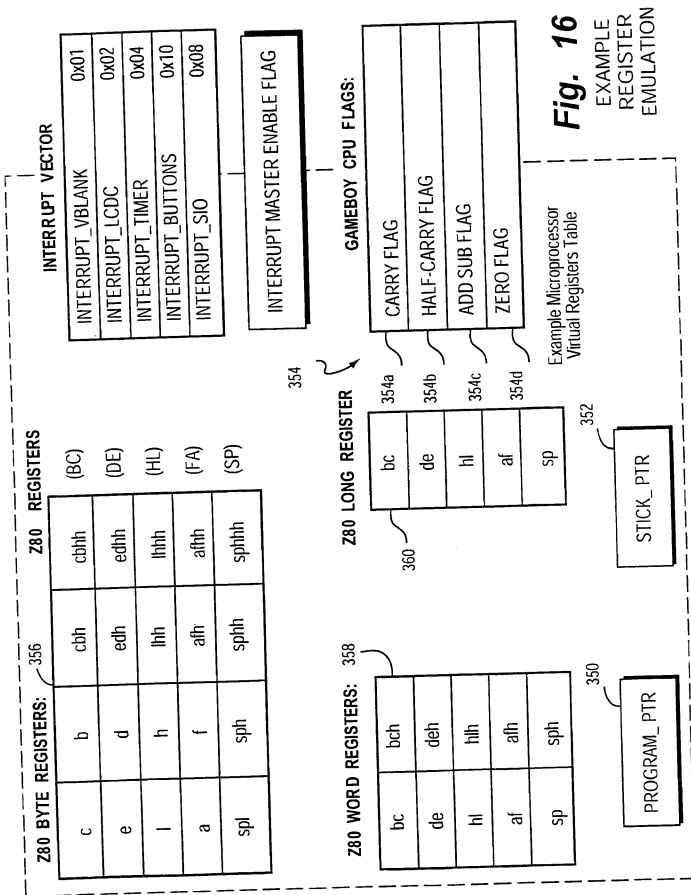


Fig. 16
EXAMPLE
REGISTER
EMULATION

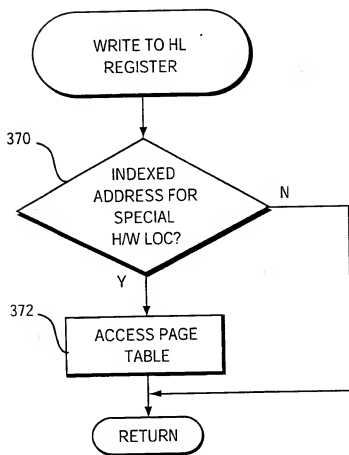


Fig. 17

EXAMPLE HL REGISTER
WRITE OPTIMIZATION

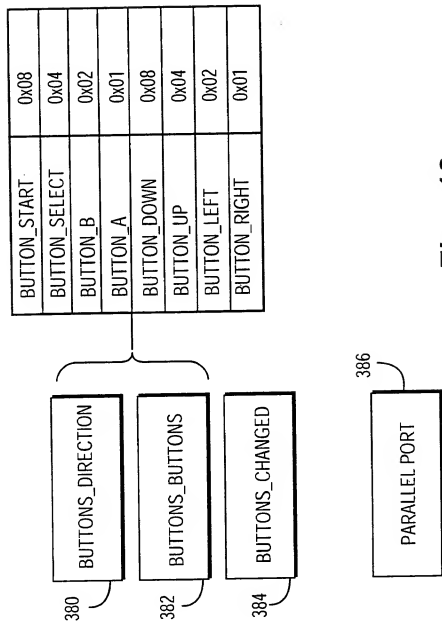


Fig. 18
EXAMPLE CONTROLLER EMULATION
(BUTTON STATE)

GAME SPECIFIC EMULATION OPTIONS:

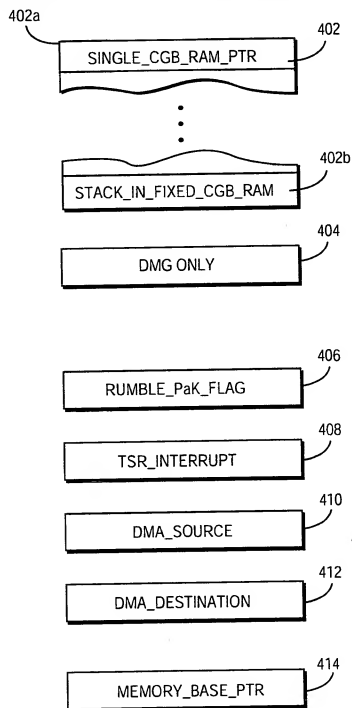


Fig. 19A

EXAMPLE VIRTUAL MICROPROCESSOR
DATA STRUCTURES

REGISTERS

| | |
|-------|--------|
| P1 | 0xFF00 |
| SB | 0xFF01 |
| SC | 0xFF02 |
| DIV | 0xFF04 |
| TIMA | 0xFF05 |
| TMA | 0xFF06 |
| TAC | 0xFF07 |
| IF | 0xFF0F |
| NR10 | 0xFF10 |
| NR11 | 0xFF11 |
| NR12 | 0xFF12 |
| NR13 | 0xFF13 |
| NR14 | 0xFF14 |
| NR21 | 0xFF16 |
| NR22 | 0xFF17 |
| NR23 | 0xFF18 |
| NR24 | 0xFF19 |
| NR30 | 0xFF1A |
| NR31 | 0xFF1B |
| NR32 | 0xFF1C |
| NR33 | 0xFF1D |
| NR34 | 0xFF1E |
| NR41 | 0xFF20 |
| NR42 | 0xFF21 |
| NR43 | 0xFF22 |
| NR44 | 0xFF23 |
| NR50 | 0xFF24 |
| NR51 | 0xFF25 |
| NR52 | 0xFF26 |
| LCDC | 0xFF40 |
| STAT | 0xFF41 |
| SCY | 0xFF42 |
| SCX | 0xFF43 |
| LY | 0xFF44 |
| LYC | 0xFF45 |
| DMA | 0xFF46 |
| BGP | 0xFF47 |
| OBP0 | 0xFF48 |
| OBP1 | 0xFF49 |
| WY | 0xFF4A |
| WX | 0xFF4B |
| KEY1 | 0xFF4D |
| VBK | 0xFF4F |
| HDMA1 | 0xFF51 |
| HDMA2 | 0xFF52 |
| HDMA3 | 0xFF53 |
| HDMA4 | 0xFF54 |
| HDMA5 | 0xFF55 |
| BCPS | 0xFF68 |
| BCPD | 0xFF69 |
| OCPS | 0xFF6A |
| OCPD | 0xFF6B |
| SVBK | 0xFF70 |
| IF | 0xFFFF |

Fig. 19B

EXAMPLE VIRTUAL
MICROPROCESSOR DATA STRUCTURES

| | |
|--------------|------|
| LCDC_BG | 0X01 |
| LCDC_OBJ | 0x02 |
| LCDC_OBJSIZE | 0x04 |
| LCDC_BGCODE | 0x08 |
| LCDC_BGCHR | 0x10 |
| LCDC_WINDOW | 0x20 |
| LCDC_WINCODE | 0x40 |
| LCDC_CONTROL | 0x80 |

| | |
|-----------------|------|
| STAT_MATCH | 0X04 |
| STAT_INT_HBLANK | 0x08 |
| STAT_INT_VBLANK | 0x10 |
| STAT_INT_OAM | 0x20 |
| STAT_INT_MATCH | 0x40 |

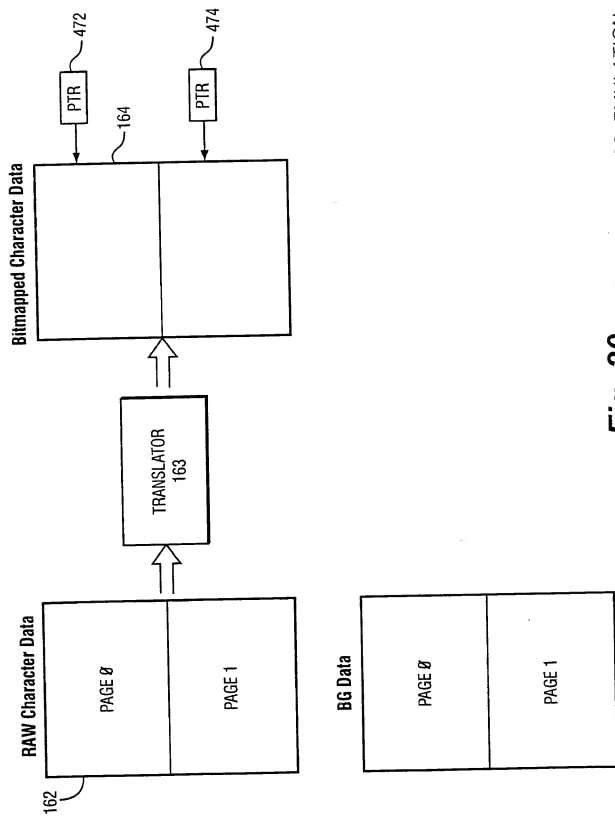
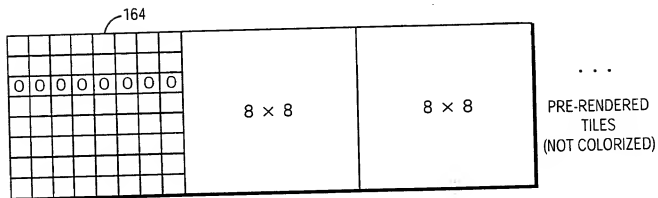


Fig. 20 EXAMPLE GRAPHICS EMULATION

| | | | | | | | |
|------|--|--|--|--|--|---|---|
| 8001 | | | | | | 1 | 0 |
| 8000 | | | | | | 0 | 0 |

Fig. 21
EXAMPLE CHARACTER DATA



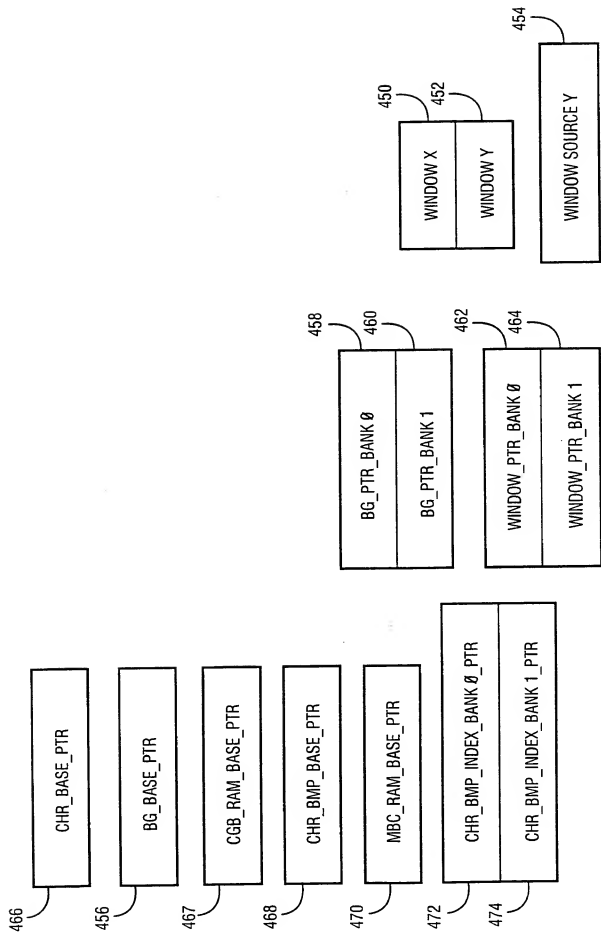


Fig. 23 EXAMPLE GRAPHICS OBJECT POINTERS

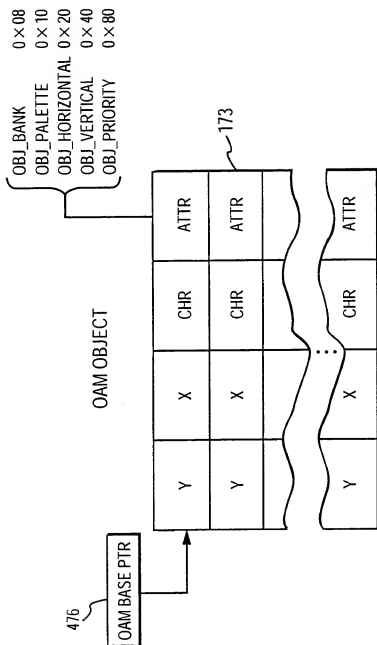


Fig. 24

EXAMPLE EMULATED OAM

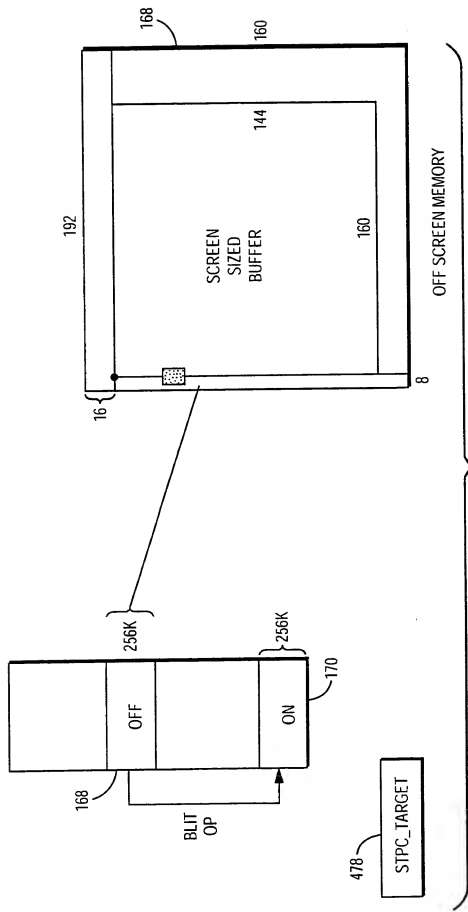


Fig. 25

EXAMPLE VIDEO MEMORY

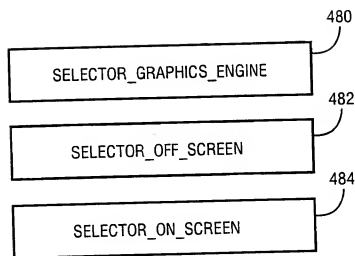


Fig. 26 EXAMPLE GRAPHICS MODE SELECTORS

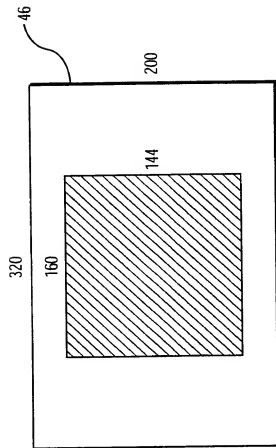


Fig. 27
EXAMPLE SCREEN LAYOUT

Fig. 28 EXAMPLE VGA MODE CONTROL

| | |
|--------------------|-------|
| VIDEO_INT | 0x10 |
| SET_MODE | 0x00 |
| VGA_256_COLOR_MODE | 0x13 |
| TEXT_MODE | 0x03 |
| REGISTER_MASK | 0x3C6 |
| COLOR_INDEX | 0x3C8 |
| PALETTE_REG | 0x3C9 |
| INPUT_STATUS_1 | 0x3DA |
| VRETRACE | 0x08 |

| | |
|----------------------|---------|
| GE_DESTINATION_BASE | 0x018 |
| GE_DESTINATION_PITCH | 0x028 |
| GE_DESTINATION_XY | 0x10000 |
| GE_HEIGHT | 0x048 |
| GE_PIXEL_DEPTH | 0x07C |
| GE_RASTER_OP | 0x08C |
| GE_SOURCE_BASE | 0x098 |
| GE_SOURCE_PITCH | 0x0AC |
| GE_SOURCE_XY | 0x0BC |
| GE_WIDTH | 0xC8 |

Fig. 29 EXAMPLE GRAPHICS
ENGINE REGISTER INDEXES